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REPORT OF DENTAL OFFICER FOR ANTARCTIC SUPPORT ACTIVITIES FOR OPERATION DEEP FREEZE '62

by

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SUMMARY PAGE

THE PROBLEM

To put on record, in an informal type of report, the experiences of the Dental Officer attached to the Antarctic Support Activities Operation Deep Freeze '62; to describe an idea of conditions in Antarctica as he found them; and to make recommendations aimed at helping future ASA Dental Officers perform their duties more efficiently.

FINDINGS

The staging activities at Davisville, R.I. are described and also the period of instruction at NMRL, New London, Connecticut; then the trip to McMurdo Sound and a description of the facilities in the Dental Department there, as well as the duties of the Dental Officer,--regular, collatoral, and research.

APPLICATIONS

This informal summary of what happens at every stage of this unusual type of duty should be of considerable assistance to subsequent dental officers serving in the same area.

ADMINISTRATIVE INFORMATION

This investigation was conducted as a part of Bureau of Medicine and Surgery Research Project MF005.12-5220-2, Study of Oral Health in the Antarctic. The present report is No. 12. It was approved for publication on 8 November 1963 and designated as MRL Report No. 415.

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TABLE OF CONTENTS

REPORT OF DENTAL OFFICER FOR ANTARCTIC SUPPORT ACTIVITIES FOR OPERATION DEEP FREEZE '62

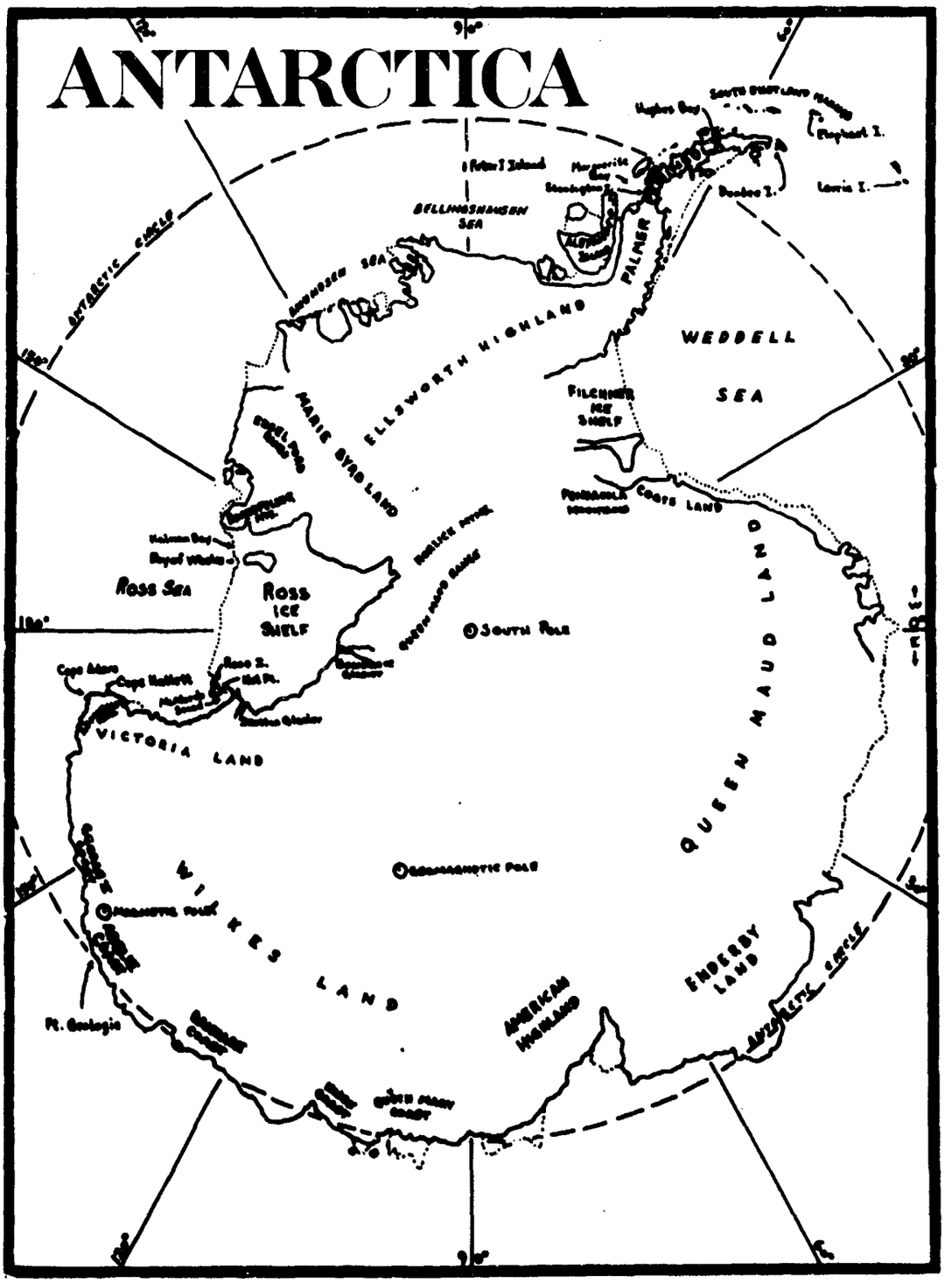
INTRODUCTION

Though being in Antarctica is no longer as rugged, adventurous, or glamorous an experience as it once was, the sub-continent is still a frontier. It is one of the very few places still left in the world which has opportunities for those who desire something more from life than the security and conformity of contemporary society.

Since so many questions are invariably asked about general conditions of life in Antarctica, I shall attempt to present some background material for those persons unfamiliar with the area and to furnish answers to the questions that are most frequently asked. This material is only indirectly related to the main purpose of this paper,-- a discussion of the Dental Officer's role in Operation Deep Freeze, and certain recommendations concerning it.

GENERAL DESCRIPTION OF ANTARCTICA

In the belief that one picture is worth ten thousand words, the following sketch of a Polar projection of the portion of Antarctica that this paper is concerned with is presented below for orientation:



Antarctica is a continental land mass and several large islands connected and entirely covered with snow and ice except along coast lines, on steep faces and peaks of mountains, and in certain valleys called "Dry Valleys." These areas remain barren due to various combinations of high winds and warmth from sunlight or the sea. Although in some areas the ice cap is more than two miles thick, so little new snow falls each year that, precipitation-wise, Antarctica is classed as a desert. Snow accumulation problems at camps are due almost exclusively to drifting. The snow is very dry and granular, and the wind blows quite consistently and very often with great force. Temperatures, as on any continent, vary with the season, location, time of day, etc.; but to provide a general idea, at Pole Station the usual yearly high is about 0°F. and the low about -105°F. whereas at Hallett Station (in what is called the "Banana Belt") the high may occasionally be 45°F and the low seldom below -10°F.

The phenomena of constant daylight and constant darkness separated by periods of transition occurs throughout Antarctica. The length of each period, especially the transitional periods, varies with the latitude. Thus, Hallett Station has more daylight and far more twilight each year than does Pole Station. These periods as they occur at McMurdo Station, being about half way between the Antarctic Circle and the Pole, are about average for the continent. At McMurdo Station, constant daylight (i.e., no sunset, thus no twilight) begins the first of March. The length of time the sun remains below the horizon (thus the amount of twilight and night) increases each day until about mid-April when the sun no longer rises above the horizon, leaving only twilight and darkness. The length of twilight diminishes until about mid-May when there is only night. About the first of August, the constant darkness is broken by a bit of twilight which gets longer and brighter each day. Shortly after mid-August the sun first rises. Each day it stays above the horizon for longer and longer periods, increasing both the twilight and the daylight until about mid-October when there is no longer any night.

From the layman's point of view, the continent supports no life; but some low forms of mosses and lichens can be seen as a filmy coloration on the underside of rocks in certain areas and the Dental Officer has been told that in the northern extremities of the Palmer Peninsula some scrubby coarse grass can be found. The surrounding seas abound with forms of life ranging throughout the phylogenetic series. The animals normally seen in coastal regions are skuas, seals, penguins, and killer whales. Skuas have been seen far into the interior, but so rarely that saying nothing could be seen there would be essentially true.

The skua, a migratory brown gull about two feet long, is both a predator and a scavenger that naturally feeds upon fish, penguin eggs

and chicks, seal's afterbirth, and carrion; but since the advent of man in Antarctica, can most frequently be seen rummaging in garbage dumps. Skuas will attack even a man without hesitation if the man chases it away from its food a few times or gets near its nest. They will also occasionally swoop on a man for no apparent reason, but not too close, perhaps evaluating him as potential prey. Needless to say, no one has any great admiration for the skua.

The seals come up on the ice to bask in the warmth of the sun, sleep, and bear their pups. They are generally found in areas where the shelf ice has buckled and/or cracked, due to horizontal pressures it exerts upon itself or a shoreline, leaving relatively thin refrozen areas through which the seals make holes. The holes are made, the Dental Officer has been told, by a seal ramming his way up through the ice, or if too thick, by using his body heat to melt his way through. These are kept open by frequent usage. The seals commonly seen are named Weddell Seals. They are brown to a yellowish gray in color, when full grown are about 12 feet long and must weigh 1000 pounds, feed on fish, and like Garbo--all they want is to be left alone. They either ignore or merely look at a man until he gets close enough to touch them, and sometimes not until he actually does touch them will they wriggle off for the nearest hole. If they are headed off from the hole, they continue to "run" until pursuit stops or until they become tired. When tired, they flip their hind flipper and roll around. Getting struck with those flippers or being rolled upon could easily break a person's leg, nevertheless, seal riding was considered great sport by the more adventurous souls. In striking contrast to the docility of the Weddell Seal is the viciousness of the Leopard Seal. Fortunately, they are very rarely seen in the McMurdo area, none being reported during DF'62. Personnel at Hallett Station see a few each year.

The Adelie penguins come ashore to mate and hatch their chicks at rookeries that have been used for centuries. The rookeries are in areas free from snow where pebbles are plentiful as pebbles are used both in courtship and in nest building. As even the penguins can't recognize each other's sex, the male penguin drops a pebble at a likely looking prospect's feet, and if the prospect is female (and I suppose willing) she picks up the pebble and thus they are united in matrimony. As yet, there has been no confirmed report of a homosexual penguin. The nests amount to nothing more than a haphazard ring of pebbles about two feet in diameter on top of bare rock or frozen earth, but the penguins make a real production out of fussing about with the pebbles, hauling them from long distances when closer ones are available, and stealing them from each other's nests. Stories of the humorous stupidity of the Adelie penguin abound, but little is said of the courage displayed by the knee-high, awkward, and defenseless birds in taking on all comers to protect their nests, chicks, or each other. If one

walks into a rookery in a rapid, direct manner, he will find his legs being battered by rudimentary wings and pecked at by harmless beaks regardless of the fact that he probably out-weighs any of his assailants by about 40 times. To see them jump up and down, peck at the air, and beat their wings when a skua attacks the rookery and know that this is the limit of their offensive potential is almost pathetic; yet it is usually enough to send the skua looking for an easier meal such as a stray chick. One day when the Dental Officer was amusing himself by chasing and taking pictures of a group of penguins on some rough ice where they couldn't slide on their bellies fast enough to get away, one of the group stopped to do battle with the Dental Officer to allow the others to waddle off to safety. He did not carry on a diversionary movement (as hen pheasants do) or fight a retreating "rear-guard" action, but actually staged a counter-attack. Nothing less than the highest respect could be felt for the little fellow. In comparison to the small, stupid, frivolous Adelie, the Emperor Penguin is appropriately named. They are about twice as tall and weigh about eight times as much as the Adelie, are much more handsome, and conduct themselves with serene regality. As their rookeries are not close to the McMurdo or the Hallett area, only occasional strays are seen. When approached by a man, these self-confident majestic birds won't even move out of his way, let alone flee.

The killer whale is really a porpoise that has been so named due to its large size (about 30 feet in length) and aggressive nature. In packs they will attack even the Great Blue Whale which is the largest animal ever known to exist. If they see a penguin, seal, or a man near the edge of the ice shelf, they dive deep and rush up under the ice so as to break it off and then dump their prey into the water. As far as is known, no man has succumbed to the killer whale as yet, but several have had to run like blazes to avoid it.

Though the seals and penguins are ungainly, and quite helpless when out of the water, the story is far different in the water. Both swim with amazing speed and agility and only through surprise, error, or long pursuit in open water can they be caught by the killer whale. All of the animals migrate north when winter approaches. The seals and the penguins go to the edges of the pack-ice and the skuas to various islands.

Currently, personnel of Operation Deep Freeze maintain four permanent stations and are establishing a fifth. Additionally, two auxiliary stations and various field camps are operated each summer. McMurdo Station, the big city of Antarctica with a population of about 225 in the winter and averaging about 850 in the summer, is the hub of United States operations in Antarctica due to its location far into the continent, on land, and at the edge of the barrier ice. It is as far south as a ship can go, thus aircraft flights to the interior are

as short as possible. Being at the edge of the Ross Ice Shelf, it is provided with both a large flat area for an airfield and permanent solid ice so that ships can still tie up to off-load (rather than use small boats) after the annual bay ice breaks up and goes out. The permanent portion of the station is on land rather than on the ice shelf; thus there is no danger of crevasses in the camp area or of going to sea in the event that a large piece of the ice shelf breaks off. There is no cliff between the station and the shelf ice or bay ice, thus access from the airstrip, or the ship off-loading sites, presents no problem. The camp site is a relatively warm area due to being near the sea, being on land which absorbs much heat from the sun, and being sheltered on three sides by large hills which break up the winds. Furthermore, McMurdo Station is close to many areas of scientific and historic interest. A penguin rookery, glaciers, mountains, dry valleys, Shackleton's old hut, and Scott's ill-fated camp are all within an hour's helicopter ride. An Ice Shelf, pressure ridges, an ice cave, the limitless biology of the sea, and another of Scott's huts are within walking distance. The only things that McMurdo Station lacks, that could be reasonably expected in Antarctica, are;

(1) A large flat area of land so that the ice runway could be eliminated in favor of a conventional landing field;

(2) A more readily available source of fresh water.

McMurdo Station functions as the supply and transportation center for all United States operations in Antarctica. Everything and everybody comes into or goes out of Antarctica through McMurdo Station with the exception of most of the cargo intended for Hallett Station.

Hallett Station is a joint United States-New Zealand station with a winter population of about 20. The winter populations of all outlying stations are divided about evenly between civilian and military personnel. The military primarily maintain the station and the civilians carry out their research projects. Half of the civilians at Hallett Station were New Zealanders. The size of the summer population of each outlying station depends largely upon the construction, repairs, etc. to be undertaken that season, but is always somewhat increased both in civilian and military personnel.

Hallett Station is situated at the mouth of Hallett Bay on a plain at the base of one of the mountains that surround the Bay. Between the mountains, snow, and the huge icebergs in the area, Hallett Station is certainly in the most beautiful location of any of the U.S. stations. The flying season is very short as the Bay ice breaks up early in the summer; thus cargo for Hallett Station is off-loaded from the ships into small-boats (Mike boats) and brought ashore in the manner of an amphibious landing. The station is located at an Adelie penguin rookery

on land that after a long, hard struggle was liberated from the penguin. In warm weather, Hallett Station has a distinctive odor.

The "land" upon which McMurdo and Hallett Stations are situated is permafrost of volcanic rock and ash. It is so hard that as yet no effective means to dig in it has been devised. The small amount of leveling and the few excavations that have been done at McMurdo Station were accomplished by blasting. Fill is obtained by scraping up the residue from the blasting and crushing it in a "lump-grinder" or by scraping off the thin layer of loose surface material that exists in snow-free areas where the surface of the permafrost has lost its water content by sublimation or melting, leaving no cementing media to hold the material together. Without some snow cover, both of these stations are very muddy or very dusty and sometimes both. McMurdo Station if often referred to as McMud-hole. Snow removal is performed religiously all winter, not to prevent being snowed in, but to reduce the amount available to melt and form a quagmire the following summer.

Pole Station, properly called Amudsen-Scott Station, is at the geographic South Pole at an elevation of 9200 feet above sea level on 5000 feet of ice and has a winter population of about 20. Old and New Byrd Stations are in Marie Byrd Land at an elevation of 5000 feet above sea level on 10,000 feet of ice with a winter population of about 40. Old Byrd and Pole Stations were built on top of the flat ice cap. Lacking the shelter of hills and mountains and the warmth of the land and sea that McMurdo and Hallett Stations have, the amount of drifting snow at these stations is enormous. To prevent being snowed into the buildings, spaces between and around the buildings were covered. The stations soon became completely drifted over. From a distance, a very gradual rise in the otherwise featureless terrain may be discerned, but from close up, particularly since the stations are entered through descending tunnels, they have every appearance of having been built under the surface. Were it not for antennas, aurora observation towers, equipment, etc. above the surface, the stations would be well neigh impossible to see from any distance.

Due to the weight of the accumulated snow, much bracing of the overhead has been done underneath. At Old Byrd Station, the supports were buckling or collapsing and the buildings being warped out of shape. Thus, New Byrd Station was built five miles away and Old Byrd has been abandoned. At Pole Station, which is smaller and accumulates drift less rapidly, much of the snow on top of the station is removed each year. Obviously, a bulldozer cannot be used to push the snow because of its weight; so a large board (perhaps five foot by three foot) is employed in the same manner as the blade of a bulldozer. The board is connected by a cable on the front side to a winch and has handles behind with which it is steered and controlled by the great efforts of a man. This is basically the same device farmers used long ago, pulled

by a horse, to level earth. This is quite a job, particularly in the atmosphere of Pole Station which is so rare that unadjusted persons become dizzy upon taking a dozen or so fast steps.

New Byrd Station is the only station built below the surface in Antarctica. This was done by digging huge trenches with a device called a Peter Snowmiller, erecting buildings, etc., covering the trenches with corregated steel braced by girders, and then pushing snow back over them leaving the area very flat and only slightly higher than the surrounding terrain so as not to accumulate more drift. Insulated buildings are used in the tunnels not so much to keep the cold out but to keep the heat in so as not to warm the tunnels. Also, air circulation systems are employed to keep the tunnels cold. Even with these precautions, excessive settling is occurring, thus the original plans to install a Nuclear Power Plant have been cancelled.

Little Rockford and Beardmore are auxillary air facilities situated approximately half-way between McMurdo Station and Byrd and Pole Stations respectively. Their primary purpose is to provide directional radio signals and weather reports for the aircraft and can serve as shelter in the event that an emergency landing becomes necessary. They also relay radio messages when conditions are abnormal and maintain contact with field parties when necessary. They consist basically of a group of Wannigans (insulated buildings on a large sled very similar to a railroad caboose) which are manned by six and four men respectively during the flying season. Being closed all winter, it is quite a job to open them each spring. To open them, a party sets out from McMurdo Station in an aircraft with about eight hours of endurance on a day when it appears that good weather will hold. To fly directly to either auxillary station takes 1-1/2 to 2 hours, but since they are snowed in, they usually must be searched for. Once found, the aircraft lands on the unprepared surface which is usually sastrugi (wave-like ridges caused by the wind) as much as two feet high. The engines cannot be shut down as it is still very cold (perhaps -20°F). All the labor of digging the stations out and hauling fuel and gear from the aircraft into the stations must be done by simple man power. It is generally quite difficult to get the equipment (engines, generators, radios, etc.) at the station to operate due to being cold soaked. As the aircraft still needs two hours of its endurance to return to McMurdo Station, these camps must be opened up successfully and safely in about four hours or the entire party must return and wait to try again when the weather permits.

Work was begun on a new station high on a plateau in the mountains near the base of the Palmer Peninsula on the Eights Coast during DF'62 and completed during DF'63. Equipment, supplies, and men were transported from McMurdo Station by 12-hour C-130 flights with refueling

stops at Byrd Station and by 18-hour non-stop C-124 air-drop flights.

In past years three other permanent stations have been operated by the United States. Ellsworth Station has been turned over to Argentina, Wilkes Station to Australia, and the well-known Little America Stations have been abandoned. The Little America Stations were built near the edge of the Ross Ice Shelf. The drift problem was as bad as Byrd Station and the formation of large crevasses was an everpresent danger. At present, Little America V, the last one established, is buried under twenty feet of snow and it is supposed that some of the others have gone to sea with the breaking off of the ice shelf.

Shelter: At Byrd and Pole Stations, buildings referred to as T-5's are used almost exclusively. They are made of up prefabricated, insulated, four-inch thick, wood sections lined with a thin layer of metal that are joined to make various sized and shaped structures. They are very tight and hold the heat very well. During the summer, if the increase of personnel makes it necessary, Jamesways are erected and also used. A Jamesway is a quonset hut shaped tent with a wooden framework and deck that comes in sections to facilitate handling and permit erection in any desired size.

At McMurdo and Hallett Stations, T-5 buildings, Jamesways, insulated Quonset Huts, Jumbo Quonset Huts, and Butler Buildings are used. During the winter only the T-5's and the insulated Quonset Huts, with rare exception, are used as living or office-type work spaces. The others continue to be used for shop-type work and storage, or are converted to recreation spaces. The Jamesways at McMurdo proper are closed up, and the entire Williams Field Camp, which is composed of Jamesways and Wannigans, is disassembled and stored during the winter.

Living areas vary considerably, but as a broad generalization each man has a space approximately 10 feet by 8 feet to live in during the winter. This may be as a one-man room or half of a two-man room. The "rooms" were made by erecting plywood partitions in the buildings in various arrangements. Each room is generally furnished with a bunk for each man, a locker or two, something to serve as a small desk, a chair, a lamp or two, and perhaps a book shelf. Each hut has a lounge/recreation area about the size of two single rooms containing chairs, tables, lamps, and usually a bar. Decoration and additional refinements vary so much from hut to hut as to be indescribable. The disuniformity of the interiors of these buildings is due to the inside work being pretty much left up to the residents of the hut who had to use whatever was available or could be "cumshawed." Cleanliness and repair are the responsibility of the residents of each hut, except senior officer's huts during the summer. Since the enlisted men's living spaces are included in periodic inspections, they are kept reasonably clean. Unfortunately, the same cannot be said for all the civilian and officer

living spaces. During the summer, the population of all huts is roughly doubled and the Jamesways and at McMurdo Station one Jumbo Quonset Hut are used for berthing, essentially in barracks fashion.

Buildings are heated by two types of oil stoves, the common space heater and a thermostatically controlled forced air type called a jet heater, neither of which is satisfactory. In cold weather, the jet heaters could not begin to heat the same area that they heated easily in warmer weather (i.e., they lack versatality) and they have occasional mechanical problems. The space heaters present several problems. All the heat comes from one point resulting in hot and cold areas and inordinate layering of the heat in the building, even when fans are employed. When in a tight building providing little draft and high winds cause chimney "pull", the fire is often "sucked out" and soot spews all over the room from the flue damper. Not the least of these problems was too many people independently experimenting with heat regulation. On top of these problems, the oil stoves consume vast quantities of fuel oil which, because of its bulk, is a major task to ship and store, and ends up being very expensive. Furthermore, since it has a very low freezing point, it is dangerous to handle in very cold weather. Thus, during DF'62, the Nuclear Power Plant (PM3-A) was built at McMurdo Station which provided power for a total of about two months. The men considered it a failure and the "politicians" weren't too happy with it, but the engineers thought it was doing very well considering it was a prototype and had to operate under extremely stringent restrictions (unreasonable according to the engineers) imposed by the Antarctic Treaty of 1957. While it produced power, the buildings were heated by electric wall heaters. Each is equipped with a fan and a solenoid controlled by a thermocouple and most are sorely in need of adjustment (or replacement) as the noise made by the solenoid and the fan was enough to wake the dead.

The very dry air of Antarctica, when heated, attains an extremely low relative humidity which causes considerable discomfort over a period of time. This was slightly relieved by keeping buckets of water on the space heaters, but little could be done when jet or electric heaters were used.

Electricity is supplied by 250 kilowatt generators driven by diesel engines. McMurdo has three of these and keeps two at a time on the line supplying a maximum of 500 kilowatts. As a result of the fine, conscientious job done by the men of the electric ship, there was amazingly little fluctuation of power. When all the kinks in PM3-A get straightened out, these generators as well as the oil stoves, will be needed only as standbys.

Clothing: Cold Weather clothing drawn from Army, Air Force, and Navy stocks is issued to all military and civilian personnel except USARP

personnel who receive an issue of civilian cold weather gear which they supplement with "cumshawed" military clothing. The USARP clothing being both different and colorful was in great demand among the men to break the monotony of olive drab military clothing, thus was of great value in bartering. Judging by anything the Dental Officer saw or heard of, no better cold weather clothing exists than the assortment issued or available to the military personnel when worn in various appropriate combinations. There is no reason for an individual to bring any other clothing unless he desires something colorful or had something he particularly liked to wear in cold weather. If the Dental Officer had it to do over, he would have taken a set of tropical whites just for laughs. Each Sunday the DF'61 Chaplin wore an old set of blues, in his words, "Just to let everybody know it was Sunday." With this dress blue uniform he wore the large white rubber boots, thus coming close to "Dress B Blues and tennis shoes" as anyone is ever likely to see.

Prior to and including DF'62, personnel in Antarctica wore whatever they desired. The only semblances of being in uniform was the wearing of collar, cap and naval or aviation devices, as appropriate, by most officers during the Summer Season. All DF'63 military personnel came in wearing the proper devices on all appropriate pieces of clothing and dressed in a military manner. As time passed, the wearing of devices became lax, but they remained dressed in only issued clothing and were always covered outdoors. Whether maintaining a military appearance will become rigidly enforced or will be forgotten about remains a question. Being accustomed to seeing only officers wearing devices, just after opening up for the DF'63 Summer Season, the Dental Officer mistook a third class petty officer with a "crow" on the shoulder straps of his field jacket for an Army Colonel.

Chow: All United States personnel ashore in Antarctica subsist from the general mess. At outlying stations meals are eaten in what might be described as a "family buffet style"; the food is put on a counter, everyone picks up dishes etc. and helps himself to what he wants. At McMurdo Station, the procedure is more in the usual mess-hall style. After waiting in line for a length of time proportioned to the current population, partitioned trays are carried along a cafeteria-like line. The chow is dished out by mess cooks to speed things up during the highly populated summer, but each serves himself during the winter. The rear one-fourth of the mess-deck is partitioned off as an officer and civilian mess area.

A maximum possible variety of food, never of less than good and often of outstanding quality is shipped to Antarctica. By necessity, it must be all in a form or of the type that will not spoil for long periods and regardless of the method of preservation, it all becomes frozen. The only exception is the very occasional receipt of fresh

produce during the flying season. During the winter, the ASA cooks, who apparently were among the better cooks in the Navy and also received some special training during the staging period, turned out meals of excellent quality and variety, especially considering the limitations imposed by the above factors. During the Summer Season, when numbers well beyond the normal capacity of the facilities in the galley had to be fed, the preparation of the meals occasionally left something to be desired, but at no time was there any restriction on the quantity of food available to each man.

A few examples may provide a better idea of the chow than the forgoing generalizations. Upon seeing a pan full of inch-thick tenderloins, it was not uncommon to hear a man in the chow line exclaim, "OH NO, not steak again!" The Dental Officer is sure that he ate twice as many mushrooms during his year in Antarctica as he did during all the previous years of his life. An excellent natural provolone cheese, gourmet quality hard salami, mixed salted nuts (without a peanut in the can) etc., were all available. Nevertheless, as with any institutional food, after a while one became tired of it, and the lack of fresh vegetables, fruits, eggs, and milk, was sorely felt.

So much for the general conditions to be found in Antarctica and its military outposts. Now some background material on the specific project called Operation Deep Freeze is in order.

BACKGROUND OF DEEP FREEZE

Operation Deep Freeze began in the austral summer of 1955-56 in preparation for the International Geophysical Year of 1957-58. The U.S. Navy's role in the IGY was to provide all support for the civilian personnel who were to carry out various scientific investigations. At the completion of the IGY, it was apparent that much fruitful research remained to be done in Antarctica, and the operation was extended. Subsequently, it ran on a year-to-year basis as an expedition, with the assumption that each year would be the last. During Deep Freeze '61, the decision was made that Operation Deep Freeze would continue for many years and would no longer be operated as an expedition, but in the manner of a well-organized, efficient, and relatively economical Naval station. Thus, the current problems of operations in Antarctica are not so much those of "fighting the elements" as they are those of transforming an organization formed and operated on the basis of expedience, huge budgets, crash programs, unlimited expendability, etc., into an organization operated along normal Navy lines in so far as is possible. "In so far as is possible" is a key phrase, due to the uniqueness of the circumstances of the operation.

The organization of Operation Deep Freeze, briefly and informally,

is as follows: The Commander, U.S. Naval Support Force of the U.S. Antarctic Research Program (a division of the National Science Foundation) provides overall administration of the Operation. Various units are attached to Task Force 43, to perform specific missions, one of which is Antarctic Support Activities (ASA). Major construction is performed by a U.S.N. Mobile Construction Battalion. A U.S.N. Air Development Squadron especially equipped for Polar operations (VX-6) provides air transportation of personnel and supplies to and within Antarctica and carries out operational flights within Antarctica. U.S. Navy, U.S.C.G., and U.S.N.S., ice-breakers, cargo vessels, and tankers provide sea transportation of personnel and supplies to Antarctica and perform operational missions in Antarctic waters. A U.S. Air Force tactical command squadron has provided air transportation of personnel and supplies to Antarctica and performed air drops within Antarctica. Various other small units are drawn from anywhere within the Department of Defense to perform special missions. Antarctic Support Activities provide all other support to all personnel in Antarctica. This includes such practical, down-to-earth tasks as providing berthing and messing facilities, heads, showers, laundry, ships stores, cargo handling, communications, transportation in and around each camp, medical and dental services, minor construction, maintenance and repair, recreational facilities, etc., and everything that is connected with living conditions of the personnel.

The character of the responsibilities of ASA obviously requires that they be done throughout the year, thus ASA is the unit of the task force that "winters over" each year. Prior to DF'62, the entire unit, except for a small contingent of enlisted summer support personnel, wintered over each year, necessitating that a whole new unit be formed each year.

Antarctic Support Activities, Deep Freeze '62 was formed primarily from volunteers solicited from the entire Navy. Due to the uniqueness of the assignment, these officers and men knew very little about what their duties would actually be. In no other assignment could knowledge of standard Navy procedures and past naval experience be of less value. They began reporting to the USN Construction Battalion Center, Davisville, Rhode Island beginning in February 1961. The first officers reported aboard in mid-April. The Commanding Officer (Commander, Antarctic Support Activities) came aboard in early June. By July most personnel were aboard.

At first, no organization existed. No one with Antarctic experience was present or available and there were no instructions to give guidance. As the officers reported in, they attempted to determine what should be done and to establish some sort of a purposeful organization on the basis of letters from ASA Department Heads in Antarctica, endless questioning of returning Summer Support personnel of various

units, and miscellaneous old records and reports. Commander, ASA, who had been briefed by ComNavSupFor, Ant. in Washington, D.C., provided considerable information and direction when he came aboard. Subsequently, liaison with the TF-43 Staff was established. Radio messages and voice conferences with personnel in Antarctica provided further information. In general, the information received by ASA not only was obtained with difficulty and was late in coming, but also (for reasons that vary with the source) was quite inadequate, often biased, and sometimes incorrect.

The foregoing had the following results. Much time was lost in the early phase of staging because of no knowledge of what should be done. It was quite late before the unit started working in a useful and integrated direction. Much time and effort were expended to no avail throughout the staging period because of too little knowledge of the "facts of life" of operations in Antarctica and conflicting opinions and information pertaining to those "facts of life" from the various sources.

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* This is an unofficial and informal report of the experience and opinions of the Antarctic Support Activities Dental Officer during Operation Deep Freeze '62. It is specifically intended to provide an understanding of the overall situation as it exists, the factors that affected the '62 Dental Officer in the performance of his various duties, the extent of these duties, the effect of all or any of this on the carrying out of his primary duty. In many cases, comments are made that are not within the perogatives of a junior officer (and would not be made in an official report), but are included because they directly affected aspects of the Dental Officer's duties. It is hoped that any criticism made or implied will be construed as constructive criticism. The Dental Officer for '62 does not feel that he worked harder or longer than did other officers of ASA, or that he accomplished more than did previous ASA Dental Officers.

None of the factors discussed are in any way intended to reflect upon individuals. It is certainly true that "men make the situation," but this situation has been several years in the making; has involved a large number of different persons; and is conducted under unique circumstances, and is unique in character. The problems discussed are small details which are relatively unimportant in relation to accomplishing the mission. The truly important things always get done; not always smoothly, efficiently, or economically, but what must be done--gets done. It is to the greatest credit of the "Men of Antarctica" that they do "get the job done" regardless of natural and circumstantial obstacles.

In September, this barely prepared unit began to deploy for Antartica where they relieved their predecessors (to the man) over a period of one month at the beginning of a new season. This is a period of rapid expansion, thus great irregularity of procedure and maximum confusion. Due to several circumstances, relieving periods generally are very short, thus the individual learned only the barest rudiments of his job from his predecessor. The inherited organization, both physically and administratively, was by no means a "normal Naval Station." The facilities, equipment, services, standard procedures, standard systems, etc. that are taken for granted at any military establishment were poor to non-existent. The almost simultaneous relief of the entire previous unit, in addition, left no experienced ASA personnel in Antarctica. Physical and administrative problems that would have been disposed of easily by persons with local experience were overcome only with great difficulty by the new personnel. In attempting to change or establish procedures of any kind, great resistance was encountered from personnel of other units. Many of them had been in Antarctica previously and had what was referred to as "the Old Explorer Attitude." The fact that ASA was not senior to the other commands further complicated the problem. In brief, the first half of the summer season could be described as a madhouse.

As time passed, the personnel of ASA became familiar with the situation, understandings were reached with the various commands and among themselves, and things moved along more smoothly. Crises, crash programs, emergencies, arguments, etc. still occurred, but were taken more in stride by everyone. After "closing out" for the winter, the personnel in Antarctica carried on in a relatively routine, orderly manner. In addition to carrying on its normal work, each department made maximum efforts to organize itself in accordance with current regulations and instructions. ASA Instructions written in haste the previous summer were re-written in the light of increased knowledge. Extensive plans were formulated to insure smooth operation after "opening up" for the coming summer. Upon opening up, things ran quite well for a while, but then the "Old Explorers" and the crash programs again cropped up, not to the degree they occurred the previous summer, but enough to be discouraging.

In February 1962, the decision was made that Commander, ASA, would be more than a one-year billet, would be in Antarctica only for the Summer Season, and would return to Davisville each year to direct the staging of the next year's crew. Additional officers would be assigned to certain departments of ASA and would move with Commander, ASA, as a staff. This should be of immeasurable benefit to ASA, specifically to the department represented on the staff of Commander, ASA, and generally to the whole command. Advice on the Dental Officer's professional problems and answers to questions of a technical nature cannot be provided by this arrangement, but he will receive a

factual picture of the overall situation. Much of what is being done will have to continue in order to provide continuity and specific advice for the Dental Department.

STAGING AT DAVISVILLE

Pursuant to orders issued by the Bureau of Naval Personnel, the Dental Officer reported to Representative, Commander, ASA, on 26 April 1961 at CBC, Davisville, R.I. for duty. Rep, C, ASA (a CBC officer to whom this was a secondary assignment) referred the Dental Officer to the CBC Dental Officer, who provided the use of a Dental Operating Room, equipment, supplies, and facilities belonging to the CBC Dental Department. No provision was made to remunerate the CBC Dental Department for supplies expended by the ASA Dental Department. This inequity should be corrected.

The two dental technicians assigned to ASA were already aboard. One of them, who was attached to the Summer Support contingent of ASA, had been in Antarctica the previous summer season; thus was a source of considerable information. A letter from the ASA DF'61 Dental Officer was given to the DF'62 Dental Officer, which contained some advice, a stock inventory of the supplies at McMurdo Station, and reports of previous ASA Dental Officers. It will be remembered that as an organized command, ASA DF'62 did not yet exist. After and with considerable confusion, and wasted effort, the Dental Officer, using the above information and what he learned as he went along, finally proceeded as follows.

Based upon the stock inventory, the memory of the dental technician who had been in Antarctica, pictures of the dental office at McMurdo Station, and a little guess work, the supply order for the following year was determined. It was necessary that this be done as soon as possible so that the order could be processed through the TF-43 Staff Medical Officer, the gear procured, shipped to Davisville, and specially packed and integrated in the complex Deep Freeze supply system in time to be shipped to Antarctica via the normal supply system. Gear can be and was ordered later, but this must be kept to a minimum as it causes considerable extra burden and expense.

Personnel who had already reported aboard were then given a Type II examination. Treatment was begun on those in less than Class 2 status with emphasis on those who would require prosthetic appliances. Correspondence with the Bureau of Medicine and Surgery had been initiated requesting training for the Dental Officer in the administration of general anesthesia and in the treatment of fractures of the facial bones. In accordance with orders issued by Rep, C, ASA, the Dental Officer reported to the National Naval Medical Center, Bethesda,

Maryland, on 22 May 1961 for temporary additional duty under instruction. During this period, the ASA dental technicians performed prophylaxes and carried out the necessary paper work involved in ordering the supplies.

The Dental Officer received four weeks training in the administration of General Anesthesia. It would be impossible to overemphasize how important and beneficial this is to the ASA Dental Officer, the ASA Medical Officer, the men in Antarctica, and to the Dental Officer in possible future assignments. The Dental Officer learned a vast amount and is highly appreciative. To improve the course, it is suggested that it be a little more formalized. A pertinent but minimal amount of assigned reading prior to starting the course and perhaps an outline, drawn up by the Anaesthesiologist, of the procedure the Dental Officer is to follow would give the Dental Officer a better basis upon which to learn and thus allow him to get even more out of the course. Four weeks is the absolute minimum time to be spent in anaesthesiology if the dental officer is to develop any amount of confidence. Another two weeks would be very beneficial.

Immediately following this, the Dental Officer received a week of training in Oral Surgery with emphasis on treating fractures of the jaw and facial bones. This was primarily discussion, demonstration, observation, and guided reading. Not many patients of this type present themselves in one week. It is suggested that if the training in Oral Surgery and in Anaesthesiology are given in the same hospital, the training in Oral Surgery be given first. This would enable the Dental Officer to observe or treat any Oral Surgical cases of particular interest to him that might come in while he is in the Anaesthesiology Department.

The Dental Officer returned to Davisville on 24 June 1961. By this time, C, ASA and most ASA personnel were aboard and the unit had begun to proceed in a purposeful direction. The additional information that was now available made it possible for the Dental Officer to proceed rationally.

Personnel who had reported aboard while the Dental Officer was at Bethesda were given a Type II examination and treatment was resumed on all personnel not in a Class 2 status. As treatment of patients requiring prosthesis was completed, they were referred to the Naval Air Station Quonset Point Dental Department for fabrication of the appliances. The utmost of cooperation was received from the personnel of the NAS Quonset Point Dental Department. When lists of personnel destined for the outlying stations (Byrd, Hallett, Pole, Little Rockford, and Beardmore) became available, these personnel were called in and given a Type I examination. If they were found to be in anything less than excellent dental health, they were appointed and treated. To

explain this as well as discuss a point, the following excerpt from the ASA DF'62 Dental Officer's final report is presented:

"Dental Standards for Qualifications

1. BuPers Notice 1300 states that an applicant for Operation Deep Freeze must be, at a minimum, in a dental Class 2 status which permits 'individuals requiring routine but not early' treatment of dental conditions which are 'not excessive nor advanced' (see MMD 6-101 (1) (b)). If this is broadly interpreted, then most of the Antarctic Support Activities Personnel of Deep Freeze '62 meet the requirements, but if narrowly interpreted, very few of them met the requirements. At least 20 per cent of the men who arrived at Davisville could under no interpretation meet the requirements.

2. The Dental Officer and Dental Technician are sent to the staging area primarily for training, orientation, and to order supplies for their year in Antarctica. They certainly must also prepare the men destined for the Outlying Stations for a period of 1-1/2 years without professional dental treatment. To insure, as much as is possible, that a man will be without dental problems for 1-1/2 years, the Dental Officer must restore all carious lesions, replace all faulty or questionable restorations, eliminate any periapical pathology, remove any potentially problem-causing third molars, insure that necessary prostheses are completed, correct all periodontal disease, and educate the patient to prevent periodontal disease. To accomplish this on the roughly fifty men going to the outlying stations is a respectable task in itself; but when the condition of the rest of the command requires that the Dental Officer must additionally treat acute dental problems, bring those with advanced and extensive disease up to a dental Class 2 status, and render treatment to those needing prosthetic appliances (in the same manner as those going to the outlying stations) the total job becomes difficult, if not impossible.

It is necessary for the whole command to be in at least a dental Class 2 status, as there invariably are last minute changes in the personnel destined for the outlying stations, both in staging and after reaching Antarctica. If these men are not in at least a Class 2 status, it is impossible for the Dental Officer to properly prepare them for an outlying station at that late date. Some of these men get sent to the outlying stations without the benefit of seeing the Dental Officer before they depart. If they are in a dental Class 2 status, they may have dental problems while at the outlying stations; if they are worse, they certainly will have dental problems. Furthermore, throughout the year, many men go to various remote places for varying periods. Returning them to McMurdo for emergency dental treatment entails considerable inconvenience, loss of man-hours, and expense to the Government which could have been avoided. Thus, the dental

requirements as set forth in BuPers Notice 1300 and in Enclosure (1) of Commander, Naval Support Forces, Antarctica Instruction 6110.1 should be rigidly adhered to. Where there is room for interpretation, that interpretation should be narrow rather than broad."

All ASA DF'62 personnel, with the exception of a few who reported in very late, received prophylaxes and sufficient treatment to place them in a "narrowly interpreted" Class 2 status. Personnel who went to outlying stations (and those who required prosthetic appliances) received further treatment, as previously described, until they were truly in a Dental Class I status. Despite maximum efforts made by the ASA Dental Officer, this would not have been accomplished without the help of the Assistant CBC Dental Officer just before deployment. Apparently, this program was worthwhile, as the only dental treatment rendered by the Medical Officers at outlying stations to ASA personnel was the placement of ZnOE in two cases where restorations had fractured.

The Medical Officers destined for the Outlying Stations and the USS ARNEB were instructed in the treatment of dental emergencies. All were given a mimeographed outline, drawn up by the Dental Officer, which covered all phases of emergency dental treatment short of treatment of fractured jaws. The outline was discussed sentence by sentence. The Medical Officers observed the placement of sedative dressings on a patient "saved" for this purpose, and the treatment of acute necrotizing gingivitis on a patient who, fortunately, just happened in that morning. Each Medical Officer extracted about four teeth. These teeth were third molars without opponents that had been "saved" also. The patient's permission for the Medical Officers to do the extraction was obtained in advance in each case. This training was apparently adequate, as each of the Medical Officers had occasion to render some dental treatment and each of them found himself prepared to do so. At a minimum, two full days are required to accomplish this if the Dental Officer has had sufficient time and cooperation to line up patients for the Medical Officers. It is highly desirable for all Medical Officers to get this training simultaneously, as each will benefit by observing the others and the Dental Officer's time will be conserved.

Upon orders issued by Representative, Commander, ASA, the Dental Officer reported to the U.S. Naval Justice School, Newport, Rhode Island on 20 August 1961 for a period of two weeks temporary additional duty under instruction. This was of no direct value in this assignment as the Command held very few disciplinary actions. Those that were held, were conducted as Captain's Masts or Summary Courts-Martial, thus did not require the convening of a board.

Several trips were made to the U.S. Naval Medical Research Laboratory at the U.S. Naval Submarine Base New London, Groton, Connecticut

under Rep. C, ASA orders, which involved a total of seven days. These were for the purpose of planning a research project to be carried out in Antarctica by the Dental Officer under the supervision of the Dental Branch Head of NMRL. The project was planned, but unfortunately due to various difficulties encountered, the equipment with which the project was to be carried out arrived in New Zealand after Antarctica was closed out for the season. During the planning of this project, other possible projects had been discussed. After an exchange of messages and a voice conference with the Dental Branch of NMRL, the Dental Officer undertook one of those which required no equipment that was not available in Antarctica. This will be discussed in further detail later.

All hands, including the Dental Officer and the dental technicians, received instruction in Ansul (dry chemical) Fire Fighting techniques, the operation of heavy equipment (weasels, snow cats, bulldozers, and traxcavators) and in the operation of Navy photographic equipment. The instruction consisted of an explanation, a demonstration, and actual participation by each individual. These were given at CBC, Davisville and occupied a total of one week which proved to be time well spent. All hands also received several lectures during the staging period from various people on various aspects of Antarctica. As a part of one of these programs, the Dental Officer presented a dental education lecture with emphasis on oral hygiene which, to the Dental Officer's amazement, had gratifying results.

The ASA Dental Officer and dental technicians stood dental watches covering the entire station in rotation with the dental personnel of other units at CBC, Davisville. The Dental Officer also stood ASA Officer of the Day watches. The collateral duty of Custodian of the Welfare and Recreation Fund was assigned to the Dental Officer, but due to the previously described lack of continuity and liaison between ASA in Antarctica and ASA in Davisville and the general confusion which prevailed, this duty occupied no more than a total of two days of the staging period. As the C, ASA staff provides continuity and things become getter organized in Antarctica, future Dental Officers can expect to spend a considerable amount of time on collateral duties during this period.

DEPLOYMENT TO McMURDO

In accordance with permanent change of station orders issued by the Bureau of Personnel, the Dental Officer reported to NAS, Quonset Point, Rhode Island on 11 October 1961 for transportation to Antarctica. The long and tedious trip to Harewood Airport at Christ Church, New Zealand was made aboard a MATS R6D via Travis AFB, California; Hickham AFB, Oahu, Hawaii; Canton Island in the Phoenix group; and Nandi

in the Figi Islands. Overnight stops were made at Travis and Hickham but only refueling stops were made at Canton and Nandi. The flight from Christ Church to Antarctica may be made aboard an Air Force C-124 Glovemaster, a Navy R7V Constellation, or a Navy C-130 Hercules in that order of probability (but in reverse order for speed and comfort). The length of time one waits in Christ Church for transportation to Antarctica depends upon who or what is more needed in Antarctica at that particular time, the weather, communications conditions, and the number of aircraft in an "up" status. This period has been known to vary from one day to three weeks. Government quarters for officer and civilian personnel are generally not available, thus they must live in civilian hotels while awaiting transportation. This provides a wonderful opportunity to become acquainted with the people of New Zealand and their way of life. Storage space is provided at Harewood Airport in which uniforms, civilian clothes, luggage, and other articles not to be taken to Antarctica may be left.

After a twelve hour flight aboard a C-124 Globemaster, the Dental Officer set foot in Antarctica at Williams Field on 31 October 1961 at 2237 hours (in broad daylight) in their summer season. A twenty minute ride in a weasel across the Ross Ice Shelf, down onto and across the annual ice covering McMurdo Sound, and up onto the shores of Ross Island midway between Observation Hill and Hut Point and he was at McMurdo Station...."home" for the next 13 months.

During his first hour, most individuals have their most dramatic experience in Antarctica, as they look around at Mt. Erebus, Scott's Hut, the Royal Society Mountains, Blue Glacier, Minna Bluff, and the vast expanse of the Ross Ice Shelf. Later, beautiful sights and unique or dangerous experiences become commonplace and even, in some instances, tedious. In addition to being overawed, a person has a feeling of disbelief and of "what am I doing here?" Within a day he finds out what he is doing there--he is there to WORK. Soon afterward, Antarctica becomes reality and the "outside world" is consigned to the realm of movies and dreams. One is then what is described as "well adjusted" to life in Antarctica.

DENTAL FACILITIES AND EQUIPMENT

The ASA Deep Freeze Dental Officer for '61, LT T. M. Allensworth, was formally relieved of his primary duty on 1 November 1961, and having been previously relieved of his collateral duties, departed from Antarctica that night.

The DF'62 Dental Officer then picked up the threads of his varied duties and responsibilities. The following is a description of the dental facilities and equipment as he found them:

The Dental Department occupies a space approximately 9 feet by 16 feet in the McMurdo Station Dispensary. A conex box and three shelves about twenty feet long in a lighted and (usually) heated Jamesway provide additional storage space. Darkroom, pharmacy, ward, and lounge facilities are shared with the Medical Department. The size and arrangement of the Dental Department is far from ideal, but relative to the rest of the Station, it is adequate. All phases of dentistry can be performed, but because of this limitation of space, and the water problems, fabrication of complete dentures or cast partial dentures is very difficult. The sickbay water system has been pressurized, thus allowing the use of the water syringe on the dental unit. The cuspidor flush cannot be used (thus the aspirator does not function), due to the waste water disposal problem. A vacudent (Densco) is used to evacuate the patient's mouth. There are too few electrical circuits supplying the Dental Department, causing occasional tripping of fuses when several electrical appliances are operated simultaneously. Waste water disposal remains a very acute problem. Many hours were wasted chopping ice, thawing drains, and re-soldering broken drain connections.

McMurdo Station has probably the best equipped one-chair Dental Department in the entire Navy. The only additional piece of major equipment that there could be any need for would be a model trimmer; but the water problem prevents the use of one anyway. The dental unit (Weber, Model K) has been jury-rigged in several ways and the X-ray unit (Fisher) is in need of mechanical adjustments, but all equipment is functional. As it is thought unwise to send a dental repairman to Antarctica and since the X-ray unit is a large, bulky, low kilovoltage, floor model, it would probably be advisable to replace it with a compact, wall mounted, high kilovoltage, new unit. A system has been initiated whereby the Dental Department has two handpieces for the air turbine (Midwest). Each summer the one which has been in use for the preceding year will be mailed in for overhaul and the other used for the following year. Conscientious preventive maintenance has kept equipment breakdowns to a minimum. Repairs that did become necessary have been satisfactorily accomplished by the dental officers, the dental technicians, and Sea-Bee electricians and machinists.

Outlying Stations have various assortments of dental instruments and supplies generally in excess of what is needed or could be used in providing emergency dental treatment. The Medical Officers at these stations should be provided with a list of dental equipment they could possibly use and instructed to return the remainder to McMurdo Station.

DENTAL OFFICER'S DUTIES AND RESPONSIBILITIES

Professional services: In Antarctica, dental treatment was provided in accordance with MMD 6-98 to all persons requesting treatment.

This included Navy, Marine, Army, and Air Force personnel of various units; New Zealand civilians attached to near-by Scott Base; civilians under the cognizance of the United States in the categories of USARP, Atomic Energy Commission, technical representatives of Martin-Mariette and Lockheed Corporations, the press, and VIP tourists; and even a Russian civilian who was among a large party aboard two Russian Aircraft that stopped at McMurdo to refuel and stayed to visit for a couple of days.

Operative Dentistry, Periodontia, Endodontia, Oral Surgery, Crown and Bridge Prosthesis, Complete Denture Prosthesis, Preventive Dentistry, construction of temporary partial dentures, and repairs to prosthetic appliances were performed as available time permitted. All acute conditions received immediate attention. No bizarre oral conditions were encountered. Oral diseases that were seen, presented the usual signs and symptoms and responded to treatment in the usual manner. Conditions that are aggravated by cold air, such as exposed cementum or dentin, were no more troublesome than they would be in any cold climate. The amount, frequency, and variety of acute oral problems were commensurate with what would be expected anywhere with a similar complement of personnel. Noticeably absent from those appearing for treatment of acute conditions were personnel of ASA and VX-6. This can be attributed only to the fact that personnel of these units, the two that operate each year exclusively in Antarctica and prepare their men accordingly, were in an "all essential treatment completed" category before coming to Antarctica.

Approximate Summary of Dental Procedures Performed in Antarctica from 1 October 1961 through 30 September 1962

Procedure	OCT NOV DEC	JAN FEB MAR	APR MAY JUN	JUL AUG SEP	TOTAL
Amalgam (one surface)	1	27	63	76	167
Amalgam (two surfaces)	10	33	99	142	284
Base Intermediate	11	52	138	150	351
Endodontia (teeth)		2		1	3
Silicate	2	5	11	29	47
Sedative Dressing (teeth)	11	21	49	50	131
Inlay/Crown (Gold)		1	2	1	4
Crown, Resin				2	2
Bridge			2	1	3
Denture Repair	4	7	2	1	14
Complete Denture				1	1
Temporary Partial Denture		3		2	5
Abscess, I & D	5	5	3	2	15
Apicoectomy		1			1
Cystectomy	1				1
Root Residual, Removal				1	1
Tooth Removal	4	14	7	17	42
Equilibration		4	2		6
Gingivitis Treatment	8	31	7		46
Prophylaxis	16	16	34	77	143
Scaling (periodontal)	18	16	34	78	146
Intra-Oral Roentgenogram	39	91	150	145	425
Extra-Oral Roentgenogram	4	12		1	17
Examinations	48	131	90	132	401
Post-Operative Treatment	5	4	1		10
Total Procedures	187	476	694	909	2266
Total Patients Treated	54	137	90	132	413

Administration of the Dental Department: As previously discussed, actual accountability has not, and as yet does not exist in Antarctica. Informal records of Class 3 Plant Property and of the expenditure of precious metals were initiated by the ASA DF'61 Dental Officer and were maintained through DF'62. The ASA DF'62 Dental Officer ordered the necessary forms to facilitate the audit of Precious and Special Dental Metals and invited the attention of the command to this deficiency so as to enable DF'63 to correct the situation. The idiosyncracies of supply matters is adequately discussed elsewhere. Otherwise the administration of the Dental Department was essentially in accordance with current regulations and instructions.

Dental Research: Early explorers in Antarctica reported the occurrance of bizarre oral health problems which they attributed to the extremely cold environment. During the inception of Operation Deep Freeze, the National Research Council requested that the U.S. Navy Dental Corps investigate the problems and means of providing measures to overcome them. Each year since 1954, U.S. Navy Dental Officers attached to the U.S. Naval Support Forces, Antarctica, to provide dental care have also collected clinical and laboratory data to study possible relationships between oral and/or systemic changes and the environment in Antarctica. None of these dental officers have reported any of the bizarre problems previously mentioned or for that matter any oral problems peculiar to Antarctica.

It seems reasonable to assume, after comparing the intentional observations and data of about eight trained professional men against the casual subjective observations of a few laymen, that the etiology of the oral problems of the early explorers was the poor dental condition they were in upon entering Antarctica, and that oral health problems in Antarctica are grossly no different than elsewhere. This certainly does not rule out the possibility of subtle structural and/or physiological changes in the oral regions. Furthermore, ASA provides a static group of men for about a year and a half. For at least six months of this time, they live under the same conditions, eat the same food, are exposed to the the environment, etc. This rather unique situation may be the ideal ground for certain studies not necessarily directly related to the Antarctic environment.

Since there no longer seems to be any point in studying gross phenomena that any dental officer with the usual training can observe, future dental officers will probably require considerable indoctrination prior to starting a research project. Projects, in the future, may well entail considerably more time to carry out than they have. The ASA Dental Officer's time, both in staging and in Antarctica, is at a premium. The availability of subjects is limited by leave, liberty, and TAD during staging and long working hours, the importance of the work, and often the distance from the job to the dental office in

Antarctica. Dependence upon persons not familiar with Operation Deep Freeze for technical advice or assistance creates problems of lack of appreciation of the abnormality of the situation in Antarctica and lack of expenditiousness.

Considering all foregoing factors, it is the opinion of the Dental Officer that if future Antarctic Support Activities Dental Officers are to do research under the supervision of the Dental Branch, NMRL New London, this should be specified in their orders. In Antarctic Support Activities, as in any other unit, there is no shortage of dentistry that can be done; the Command is not lacking in collateral duties, boards, and committees which must be assigned; and it has been the experience of the Dental Officer that he had less free time in this assignment than he had at any of his three previous assignments contrary to the opinion that one must search for ways to pass time in Antarctica. If the research were assigned as a secondary duty, the Dental Officer, the Command, and NMRL New London would all be on a more sound footing.

The projects should be designed so as to be conducted primarily in the Winter Season in Antarctica and carried to completion by the dental officer and the Dental Branch of NMRL with no or a minimum of third party participation. The detailed planning and preparing of these studies and the selection of a reasonable amount of background reading should be done for the dental officer by the Dental Branch of NMRL. It would be preposterous to assume that future ASA Dental Officers, as presently assigned, will have previous research experience, more than a scant impression of Antarctica, knowledge of research that has been done in Antarctica, ideas as to what projects could be done, etc. Furthermore, the demands upon their time and efforts during staging certainly will not permit them to review all the literature and then devise possible studies they would be interested in. Undoubtedly, it would be advantageous if they were to carry out projects they personally desired to do, but it would be a poor officer who would not perform to the best of his ability any assigned project. A reasonable compromise would be to have several projects available for him to choose from. An alternate solution to this whole matter would be to assign as ASA Dental Officers, only those dental officers with a research designator; but it is feared that this would not be a practicable solution.

Collateral Duties: In the week following his arrival at McMurdo Station, the DF'62 Dental Officer assumed the collateral duties of his predecessor,--Special Services Officer, Movie Officer, and Mess Treasurer. In themselves, as used in this paragraph, the words "relieved" and "assumed" and the titles of the collateral duties are meaningless. To understand what is meant by each will require some further explanation.

Although a formal relieving letter is employed for the Dental Department, its significance is only that the relieving Dental Officer has been familiarized with the department to his satisfaction and that he is ready to conduct its affairs. It cannot possibly mean that he assumes custody of the Dental Department property and the responsibility for its condition as there are no formal records of this. Inventories that do exist have been held for purposes of resupply information and not to establish custody. In regard to the collateral duties, the lack of accountability is true to the degree that not even a relieving letter is employed to say nothing of joint inventories, examination of books and records, audits of cash records, etc. In the past, the officer having these duties left Antarctica when he thought he had explained enough about them to his relief. This has at least evolved to the point where the relieving officer decides when his predecessor has explained all that he can within practical limits.

As performed in Antarctica during DF'62, the specific duties entailed in each of the collateral duties had little or no resemblance to the duties entailed in the same position as defined in current Naval manuals, instructions, or regulations or as performed at other Naval facilities; nor were they carried out under circumstances that exist elsewhere at any Naval facility. In practice, the Special Services Officer's duties were to perform about 90 per cent of the administration and supervision and 50 per cent of the actual physical labor involved in (1) assuming responsibility for a large amount and variety of uninventoried, partially accumulated, and haphazardly stored recreation gear; (2) the provision, distribution, and associated property accounting of this and additional new recreation gear to individuals at McMurdo and the same, plus packing and shipping it to all stations in Antarctica; (3) planning, execution, and control of recreational programs at McMurdo Station; (4) insuring maintenance, repair, and regulation of Special Services facilities and spaces at McMurdo Station; (5) obtaining inventories of recreational gear at all stations; (6) determining a resupply order for the following year; (7) and simultaneously developing a Special Services organization, starting from scratch, that was administratively in accordance with current regulations and instructions and functionally efficient. The magnitude and importance of this "collateral duty" may be judged by the fact that in Antarctica, obviously, the only recreation facilities available are those provided by the Special Services Division and that the Division presently operates on a budget of about $15,000 per year and in the past has operated on budgets as high as $40,000 per year.

The position entitled "Movie Officer" may be described as the Officer in Charge and one-half the working force of a small Navy Motion Picture Exchange. Adequate organized storage and a workable system of circulation of Motion Picture Programs were in existance at McMurdo

Station and reasonably complete and accurate inventories of the Motion Picture Program at each station were available. Inventories or organized storage of projection equipment and spare parts did not exist. The use of standard Navy Motion Picture Service forms and compliance with MMPS directives was nil. Information as to how many and which new Motion Picture Program and what new equipment and parts would be received was unavailable. In all other applicable respects, the duties of the "Movie Officer" were about the same as those of the "Special Services Officer."

As there is no Officers Mess in Antarctica, the "Mess Treasurer" in reality was an agent of the Supply Officer responsible for the collection of payment for subsistance from the general mess from all officers and civilians (except U.S. Antarctic Research Project personnel) ashore in Antarctica. This had to be accomplished with no assigned personnel and despite the facts that meals are eaten all over Antarctica, there is a rapid turnover of personnel who arrive or depart Antarctica at any time on a moment's notice, and that there was no check in/check out procedure. Fortunately, the ASA DF'61 "Mess Treasurer" had put his experience to good use and had formulated a method to accomplish this in a reasonable manner. The task of ASA DF'62 was to browbeat the other commands in Antarctica into cooperating.

Since future ASA Dental Officers may be assigned different duties and (hopefully) under different circumstances, the significance of collateral duties, in this paper, is only that they occupied a considerable amount of the Dental Officer's time and effort. Thus, the details of their performance will not be described. When mention is made of the amount of time devoted to collateral duties, it is hoped that the reader will recall the scope of the above duties and realize the difficulties encountered in carrying them out in the situation that prevailed (as described in the background sections) and thereby understand why it was necessary to spend that much time on them. As to the effort devoted to them, it will suffice to say that dentistry was the least trying and taxing of any of the Dental Officer's duties. Actually, he came to look upon dentistry almost as recreation.

The Dental Officer was also appointed Senior Member of the Narcotics and Alcohol Inventory Board, a member of the Recreation Council, and being the only member of the Special Services Division was necessarily the advisor to the Recreation Committee. The performance of these duties can adequately be described as about the same as would be expected at any other naval facility. They presented no great problem; only additional responsibilities.

During this period, the working day for the men was basically twelve on and twelve off and the working week was seven days. To the best of the Dental Officer's recollection, though he wouldn't swear

to it, the only time holiday routine was declared was on Christmas Day. The officers may best be described as working around-the-clock, taking time off to eat when they were hungry, to sleep when they could no longer function adequately, and for diversion when they felt they could afford to or when the frustrations of their jobs got on their nerves so badly they could no longer stand to work. Any small psychological or personality problems, so diligently searched for in Antarctica, that may have occurred would have been due not to the isolation but to the strain and tension of the work.

The Dental Officer spent the summer primarily in the performance of his collateral duties and in efforts to improve the dental supply situation.

THE DENTAL OFFICER'S DAILY ROUTINE

The Dental Officer's usual daily routine was to be in the dental office from 0800 to 1000 each morning to hold sick call, treat acute dental problems, confer with the dental technicians on the progress of their assignments, and review the message traffic. The remainder of the day was spent on whatever aspect(s) of his various duties that was at that moment most urgently in need of attention. This routine was followed throughout the summer except as interrupted by trips to Byrd Station (two days), Pole Station (three days), and Roosevelt Island (one day). Byrd and Pole Stations were visited, ostensively, to give a final dental check-up to their personnel prior to closing out. More was accomplished along the lines of Special Services (and tourism) than in the field of dentistry. Roosevelt Island, a trail camp, was visited for the purpose of providing emergency dental treatment to a USARP civilian (and sight-seeing). On first thought, this trip might seem like the Mountain, foolishly, going to Mohammed; but, in the rationale appropriate to Antarctica, only one flight would be required if the treatment could be accomplished at the trail camp, whereas two flights would have been required to bring the man to McMurdo and then back to Roosevelt Island with the possibility of the man losing much "time in the field" between flights. Such are the facts of life during the busy Summer Season in Antarctica.

CLOSING OUT

As the various units, or portions of them, completed their mission for the season, they left Antarctica. The last "turn-around" flights to Pole and Byrd Stations were made in early February. Hallett Station was yet to be called upon by the last of the ships going out of Antarctica. About 20 February the last aircraft from "the outside" arrived at McMurdo, ending all incoming supplies, provisions, mail, etc. for

the season. By the first of March, almost all who were not to stay for the winter were gone. The U.S. Coast Guard icebreaker EASTWIND stood by, with the Skipper nervously watching the ice building up on McMurdo Sound, waiting to take the remaining few out as soon as the reactor of the newly constructed nuclear power plant (PM3A) could be brought to "critical", (a stage where it is ready to begin operation). Each of these "lasts" was accompanied by much frantic activity. On 5 March 1962 at about 1400, an appropriately gray and dismal day, the EASTWIND, steaming northward, passed out of sight of McMurdo Station. At this "Moment of Truth" the personnel of the Wintering-Over Party experienced mixed feelings of relief that the hectic Summer Season had come to an end, and of depression with the knowledge that unequivocally, one would remain in the desolate isolated place where he was, for six months with no possible contact with the "outside" except very occasionally on a ham radio that rarely worked. Although by this time, each man had become a seasoned Antarctic veteran and knew that the rigors of Antarctica were not all that some of the "Old Antarctic Explorers" had made them out to be, and though he probably never admitted it to himself let alone to anyone else, he was still a little apprehensive over what the long, dark, cold, and stormy winter would actually be like. Holiday Routine was declared and the Special Services Division with the help of the Commissary Division threw an "all hands" party in the galley. Treated to the best chow the Commissary had, which was prepared and served in a manner befitting the finest buffets, and liberally wetted-down with refreshments provided by Special Services, the men soon regained their spirit. Winter routine began the following day.

WINTER SEASON

In addition to providing support for the remaining USARP personnel, the major tasks during the winter were buttoning up McMurdo Station; tearing down the Williams Field camp; completing unfinished major construction; repair, improvement, and maintenance of the station and equipment; catching up on administrative work that had been let slide; establishing an evacuation site; physical and administrative organization of various divisions; extensive planning for the following Summer Season; building a new ice runway (which was an immense undertaking carried out under severe weather conditions that proved to be extremely hard on men and equipment alike and resulted in a serious shortage of transportation and fuel the following spring); and then erecting the Williams Field camp and reopening, improving, and preparing the unused buildings of McMurdo Station for the coming Summer Support personnel. All the hands were "on call" twenty-four hours a day, but actual working hours varied considerably according to rate, department, and the urgency of various tasks at various times. As a broad approximate generalization, the working week, which had been 84

hours, was reduced to 60 hours for about a month and then to 40 hours for the next two months. It was returned to 60 hours during the next two months and then, in the last month of the closed-out period, back to 84 hours. The officers generally maintained a more normal schedule than they had during the summer and took proportionately more time off.

During the winter season, collateral duties demanded considerably less of the Dental Officer's time even though the services and functions of the Special Services Division were greatly increased. By this time, he had become quite familiar with the physical and administrative aspects of the various duties; and also had acquired an understanding of how they should properly be conducted, became aware of the modifications of the ideal necessary to accomplish workable "legal" systems appropriate to the peculiarities of the situation in Antarctica, and pretty well knew how to go about attempting to get things done. The complement of McMurdo Station had changed from a highly mobile population averaging about 800 to a stable population of 225. Little, other than paperwork, could be done for the outlying stations and no receiving or shipping could be done. These factors plus the assignment of a man to the Special Services Division for about four months relieved the Dental Officer of the personal performance of many of his duties. He was, in effect, promoted from mostly labor to mostly management. The time made available was used for the performance of clinical dentistry, to carry out the aforementioned research project, and for relaxation and recreation.

The Dental Officer's normal routine during the winter was to render routine dental treatment from 0800 to 1200 each working day, and spend two afternoons a week collecting research data concurrently doing dental laboratory work or various odd jobs. The research program conducted was to investigate the possibility of any relationship between constant daylight, constant darkness, the change from one to the other, low temperature, and low humidity upon the incidence of secondary herpetic lesions (cold sores, canker sores, fever blisters) and upon body temperature. Twenty-four members of the Wintering-Over Party were interviewed briefly as to their health history on their initial examination, and twice each week from March to September their mouths were examined and their temperatures taken. The hours of daylight and twilight, the maximum, minimum, and average outdoor temperature, the average relative humidity, and the individual's time of exposure to these were recorded. The data has accompanied the Dental Officer to the Naval Medical Research Laboratory at New London, Conn. where it will be analyzed and organized formally.* The rest of the week was left unobligated. Over the winter as a whole, dentistry (crown and bridge, "surgical" extractions, and lab work) received about one-fourth of this time and the remainder was spent on collateral

* Results essentially negative.

duties. Actually, things were not as routine or organized as the foregoing may imply. Each day countless minor tasks had to be attended to additionally, and every now and then a crash program, usually precipitated by some message from CONUS, would radically disrupt the routine.

On 24 April the sun set for the last time. Setting and rising very slowly at that high latitude, it had provided some fantastically beautiful sights. By mid-May there was no longer any twilight. Perpetual midnight had set in. At McMurdo we saw only occasional unspectacular displays of the highly lauded Aurora Australis, but on two occasions glowing Unidentified Flying Objects were seen which turned out to be, it was later explained to us, U-2's flying above the earth's umbra. About the first of August we began to see light on the horizon. Each day on the way to noon chow, almost as a ritual, everyone looked to the north to observe the light and profoundly state that it was getting lighter. The first official sunrise (meteorologically speaking) was on 20 August and was the occasion for the last "all hands" party of the year.

SPRING

On 16 October 1962, a beautiful clear windless day, the first two incoming aircraft of the new season landed at "New" Williams Field. The newly arrived aircraft (and the fresh vegetables, fruit, milk, and mail they brought) were welcomed with open arms. New and different people to talk with produced a considerable amount of excitment and pleasure. Congeniality prevailed even though the newcomers were a strange looking bunch (beardless, dressed in clean, unragged clothing, faces that were tanned instead of having a ghostly pallor). As the aircraft were having considerable mechanical trouble, the decision was made that it was still too cold to begin full-scale flying operations. About the first of October, incoming flights resume. By mid-October the new Summer Season was in full swing.

SUPPLY PROBLEMS

Supply problems can best be explained and discussed by quoting an excerpt from the Dental Officer's Final Report:

Supplies:

1. The Dental Department has great excesses of some items and minimal amounts of others. This is due to previous Deep Freeze Dental Officers, while in staging, having an inadequate or no Inventory of what was here, thus ordering many items that were already present in sufficient

or excess amounts. During the past two years a Stock Inventory was kept which was an improvement but did not solve the problem as it was only an Inventory of what was in stock and made no mention of what was in use (a great many dental items are in use but are rarely expended hence none are kept in stock), so the Dental Officer in staging still did not know what was here. A second cause for the excesses was inadequate storage space resulting in the haphazard storage of supplies in several different places. Anytime this situation prevails, items are difficult or impossible to find. When an item could not be found, it was ordered.

2. Resupply of the Dental Department must be done by the Dental Officer in staging for the year he is to be here. Dental Officers use various techniques, thus various instruments and supplies. A selection of gear that may be proper for one Dental Officer may be totally improper for another. This does not refer to a preference for one brand or type of item over another (as so often happens with drugs) but two actually different items. It would be impractical to attempt to stock every conceivable item and then just maintain that stock level because of the infinite variety of items.

3. To alleviate the problem of paragraph 1 (above) and to facilitate paragraph 2 (above), the Dental Department acquired one side of a Jamesway, put in shelving, and stored its supplies in stock number order as much as was practical. Due to the non-dependability of heat in this Jamesway, freezable items are still stored separately. The Stock Inventory was corrected by physical inventory and expanded to include all items in use, resulting in a cardex system listing every item that belongs to the Dental Department. The whole system is still a little rough and should be improved by a better organization of the storage space and any correction of the inventory that may be necessary.

4. The Dental resupply system as established by the Deep Freeze '62 Dental Officer in conference with the Task Force 43 Staff Medical Officer and by letter to the Deep Freeze '63 Dental Officer will function as follows:

A. Task Force 43 requires the submission of an Inventory current on 1 January of each year. A copy of this inventory will be sent to the ASA Dental Officer in staging for the next year.

B. The Dental Officer in staging will study the inventory and order as he deems necessary. This should include almost the entire resupply.

C. About 1 August the Dental Officer at McMurdo will submit, to the Dental Officer in staging, a list of gear expended from

the inventory including a predicted expenditure of about 1 December.

D. The Dental Officer in staging will again order anything he feels may be necessary.

It is fully realized that this system is highly irregular but it must be kept in mind that this is a highly irregular situation. The Dental Officer is obligated to be prepared to render any type of dental treatment. He should be given the opportunity to prepare himself to meet that obligation. Once he is in Antarctica, there is little or no opportunity to order anything with assurance of receiving it.

5. The Dental Department order and inventory has been intermixed with that of the Medical Department. This practice should be discontinued as it leads to confusion as to what belongs to whom.

6. Efforts are being made to prevent the freezing of supplies enroute. These efforts should be diligently performed and improved in any way possible.

PERSONNEL

In staging, the Summer Support DT1 carried out all administrative details and rendered dental prophylaxes. The Wintering-Over DT3 was utilized as a dental operating assistant. At times when the Dental Officer was not at Davisville, both dental technicians performed prophylaxes or were otherwise employed by the CBC Dental Department. Although this was efficient during staging, it proved unwise in the long run. The DT3 did not develop an understanding of the Deep Freeze supply system, did not learn how to do the administrative work, and was not familiar with what had been done or ordered in Davisville, and thus was ineffective in these respects in Antarctica. Furthermore, the Dental Officer did not become familiar with the DT3's capabilities, except as a chair-side assistant, until well into the Summer Season in Antarctica.

During the Summer Season, the DT1 was detailed to organize and inventory the Dental Department's equipment and supplies and to instruct the DT3 in the proper performance of Dental Department clerical work. When this had been accomplished, to the degree possible, the DT1 was released from the ASA Dental Department to Commander, Naval Support Forces, Antarctica for duty in the dispensary at Christ Church, New Zealand. The DT3 assisted the DT1, maintained and repaired the DOR, assisted the Dental Officer in the DOR and occasionally in the performance of collateral duties, and helped the ASA Medical Department when needed and when available. In the winter, the DT3 additionally

assisted in the collection of research data, performed the Dental Department clerical work to the best of his ability, rendered prophylaxes, and typed the reams of paperwork required in the performance of the various duties of the Dental Officer.

Throughout the staging, summer and winter periods the Dental Technician(s) were given informal training on primarily practical matters with discussion of the theoretical background. Subjects not directly affecting the everyday performance of their duties were learned or reviewed from their manuals; the Dental Officer answering any questions they may have had.

Considering factors that concern ASA as a whole as well as those concerning the Dental Department, it is thought that one experienced dental technician, efficiently utilized, can adequately fulfill the requirements of the Dental Department for staging, summer, and winter. The Dental Technician should be at least a second class so that he will be familiar with the administrative aspects of a Dental Department, as there are as many types of administrative procedures in the smallest Dental Department as there are in the largest; only the quantity of each is different. Since such a great portion of the Dental Officer's responsibilities is the performance of collateral duties (particularly Special Services) it is very seriously and emphatically recommended that the billet for a Summer Support dental technician be replaced by a Wintering-Over billet for a senior petty officer of the DK or SK rates to assist the Dental Officer in the performance of these duties.

REDEPLOYMENT

The ASA Deep Freeze Dental Officer for '63, LT P. C. Lehman, DC, USN, arrived at McMurdo Station on 16 October 1962 and on 20 October 1962 formally relieved the ASA DF '62 Dental Officer of his primary duty. The ASA DF'62 Dental Officer had remained in Antarctica for this period of a month and a half, primarily in an effort to provide continuity and suggest appropriate changes in the Special Services Division. In the course of this period, the collatoral duties of the ASA DF'62 Dental Officer were gradually assumed by the ASA DF'63 Dental Officer as he became familiar with them. Separately, so as to cover for each other, both Dental Officers also made journeys to Hallett Station during this time.

Upon completion of his duties, the Dental Officer was detached from ASA and directed to carry out his basic orders as issued by the Bureau of Personnel. On 8 December 1962 he boarded another C-124 Globemaster and bid farewell to Antarctica. By chance, he had been

there one year, one month, one week, and one day. After a relatively rapid flight, which began in an environment of constant daylight and very dry cold air, where sounds are primarily of machines and the wind, where the predominant odors are those of diesel fuel, men, and tobacco, and where the snow, ice, buildings, machines, and volcanic ash and rock provide little more delight to the eye than a black and white movie, the Dental Officer disembarked at Harewood Airport at about 0100 on 10 December into a starlit night, the feel and sweet smell of warm moist air laden with the fragrance of growing vegetation, and the very pleasant (but seemingly uproarious) sound of crickets. The feeling was one of quiet subjective pleasure rather than joyous elation as might be expected. Shedding the Antarctic clothing for the last time, a very long shower in which far more water was used than in a score of Antarctic showers, and climbing into a bed covered with fresh white linen in a quiet clean room without the odor of stale smoke and infrequently bathed people,--all these things though simple in themselves,--were profoundly enjoyable. The next morning feeling almost naked when dressed for the first time in thirteen months without "waffle-weave long johns" and in comparatively light-weight civilian clothing, the Dental Officer, taking in the delights of green grass, trees, profusely colored flowers, cumulous clouds, the fragrance of late spring, and of walking at every opportunity on yielding turf rather than hard surfaces, wandered back to the terminal building at Harewood Airport where he spent most of the day "looking at all the people." It seemed odd to be among people one had never seen before let alone didn't know by name. They seemed even a stranger looking group than the bunch that got off the first aircraft of the season. The Dental Officer had become accustomed to seeing clean shaven faces (including his own) and new clothing but not to seeing these types and colors, or such a variety of clothing and certainly not to the delicate appearance of women. He found himself rather shy and hesitant, reluctant, or afraid to speak to anyone, hardly knew what to say when he did. He felt very much like the science fiction "alien" observing the earthmen. Eating at a table fully set with silver and dishware on a tablecloth rather than from a tray was a pleasant experience. After the initial novelty wore off, the comparative formality seemed irksome for a while. Fresh fruits and vegetables were devoured in considerable quantity with great relish at every opportunity.

Being about the middle of the Summer Season when there is little CONUS to New Zealand traffic, no MATS flights were scheduled but the VX-6 R7V was to return to NAS Quonset Point, R.I. in about ten days so the Dental Officer was manifested aboard it. The interim was spent in seeing some of New Zealand and becoming recivilized. On 22 December 1962, not without regrets, he departed Christ Church via the same route that he had come. Like everyone else on board, the Dental Officer was pleased with the prospect of getting home for Christmas, but the thought of returning to a winter climate kept nagging at him.

Upon disembarking at Hickam Air Force Base, he was overcome by the tropical climate of Hawaii so, on the spur of the moment, contacted the 14th Naval District Headquarters (whose personnel were extremely efficient and cooperative) and went on leave. The days were spent primarily on the beach losing the "Antarctic Anemia" acquired in the previous year and the evenings in sampling the various indulgences of civilization offered at Waikiki that had not been available during the previous year. After twelve agreeable days, the Dental Officer reported to COM 14 who arranged the usual transportation aboard a MATS C-118 to San Francisco.

It may be seen that when a person is heard to say that the most enjoyable part of being in Antarctica for a year is leaving, this is not necessarily a sarcastic remark. After spending a few days at several places enroute, the Dental Officer reported to the Naval Medical Research Laboratory, New London, Connecticut, for duty on 30 January 1963.

CONCLUSION

If for no other reason than very few people ever have the opportunity to do so, going to Antarctica is a great privilege. Many unusual to unique experiences will be had and much may be learned by anyone. A junior dental officer, particularly, has the opportunity to learn much about the Navy being in the midst of ship, aircraft, cargo handling, and construction operations; and about being a Naval Officer, since he will be intimately involved in inter- and intra-command relationships as well as responsible for the administration of the Dental Department. His professional knowledge will be increased by the training he receives in the administration of general anesthesia and oral surgery; and his professional proficiency can be increased since he will have the opportunity to perform all phases of dentistry. The non-dental work load and its associated irritations and frustrations are not too enjoyable, but considerable worldly-wisdom and occasionally a sense of satisfaction from accomplishment can be gained from these experiences. The isolation can be a drudgery or an interesting experience, depending upon what one makes of it.

RECOMMENDATIONS

1. If Antarctic Support Activities Dental Officers are to do research under the supervision of the Dental Branch, NMRL New London, this should be specifically stated in their orders, and assigned as a secondary duty.

2. The billet for a Summer Support Dental Technician should be replaced by a Wintering-Over billet for a senior petty officer of the DK or SK rates to assist the Dental Officer in the performance of these duties.

3. Re-doubled efforts should be made to prevent the freezing of supplies en route to the Dental Department in Antarctica.